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**Teaching content area(s):** Business / Technology

**School:** Charles City High School

**Extern host site:** Cambrex Corporation

**Part I: Overview of Business**

- Cambrex Corporation was created in 1981 and has transformed from a fine chemical manufacturer to a business that focuses on small molecule therapeutics.
- Cambrex is a leading contract manufacturing organization for small molecule Active Pharmaceutical Ingredients (APIs)
- Acquired Salsbury Chemicals in 1991. Salsbury Chemicals was the original API manufacturing facility in Charles City.

**Part II: Job Specifics**

- My main job is working with the Process Improvement Department
- Cambrex employs the Six Sigma concept
- Six Sigma within an organization follows a defined sequence of steps and has specific value targets, for example: reduce process cycle time, reduce pollution, reduce costs, increase customer satisfaction, and increase profits.
- This project’s goal is to reduce the cost of a specific item

**Part III: Introduce the Problem**

- Cambrex purchases plastic totes to store water that is used in the manufacturing process (the same totes in the picture)
- The totes can only store water for 7 days
- The totes can only be used 1 time
- Currently, Cambrex is paying to dispose of the totes
- Total annual cost for these totes is a significant cost for the company
- How can Cambrex minimize this expense?

**Part IV: Background**

- What content knowledge does student need to solve the problem?
- Students will need to know what the current cost breakdown is for the purchase and disposal of each tote
  - Students will also need to know how many totes the company uses within a specific time period (annual)
- What did the business need to learn to solve the problem?
- Can the totes be recycled/used more than once
  - Are there vendors willing to buy the used totes
  - Can the manufacturing process allow the totes to be used for a longer time period (>7 days)

**Part V: Business Solution**

- Company will conduct an analysis of the number of totes used and the direct cost associated with each tote.
- Company will then research alternative methods of disposal for the totes
- Company will research if totes can be recycled
- Company will research if totes can be used longer or more than 1 time in the manufacturing cycle
- Company will research if there is a vendor willing to buy the used totes

**Part VI: Student Solutions**

- Students will research and find a vendor willing to buy the used totes
- Instead of paying to dispose of the totes, Cambrex would be making money.
- Students can create an Excel spreadsheet displaying the cost benefit analysis